WHAT IS CLAIMED IS:

1. A device for pressure sensing and control comprising:

a sensor portion operable to sense a pressure;

a control portion operable to:

compare the sensed pressure to a set point;

generate a control signal based on a difference between the sensed pressure and the set point; and

output the control signal; and

wherein the sensor portion and control portion are integrated in a housing.

2. The device of Claim 1, wherein the sensor portion further comprises a diaphragm capacitance sensor.

3. The device of Claim 1, wherein the control portion further comprises:

an analog to digital converter;

a digital signal processor;

a memory accessible by the digital signal processor storing software instructions executable by the digital signal processor.

4. The device of Claim 3, wherein:

the sensor portion is operable to output an analog sensed pressure signal;

the analog to digital converter is operable to:

receive the analog sensed pressure signal; and

convert the analog sensed pressure signal to a digital sensed pressure signal; and

wherein the software instructions comprise instructions executable by the digital signal processor to:

receive the digital sensed pressure signal;

compare the sensed pressure signal to the set point; and

generate a digital valve control signal.

5. The device of Claim 4, wherein the analog to digital converter is further operable to convert the digital valve control signal to an analog valve control signal.

6. The device of Claim 4, wherein the software instructions are further comprise instructions executable to perform self diagnosis.

7. The device of Claim 1, wherein the housing is configured to be coupled to a process chamber.

8. The device of Claim 6, wherein the sensor portion is configured to be partially exposed to a process gas in the process chamber when the housing is coupled to the process chamber.

9. The device of Claim 1, wherein the sensor portion can comprise one of a parini gauge, a thermocouple gauge, a cold cathode gauge, or a hot cathode gauge.

10. A system for pressure control comprising:

a process chamber;

a valve in fluid communication with the process chamber;

a valve drive responsive to a control signal to open and close the valve;

a gauge with integrated pressure control coupled to the process chamber, the gauge with integrated pressure control comprising:

a sensor portion at least partially exposed to a fluid in the process chamber operable to sense a pressure in the process chamber;

a control portion operable to:

compare the sensed pressure to a set point;

generate the control signal based on a difference between the sensed pressure and the set point; and

output the control signal; and

wherein the sensor portion and control portion are integrated in a housing.

11. The system of Claim 10, wherein the sensor portion further comprises one of a diaphragm capacitance gauge.

12. The system of Claim 10, wherein the control portion further comprises:

an analog to digital converter;

a digital signal processor; and

a memory accessible by the digital signal processor storing software instructions executable by the digital signal processor.

13. The system of Claim 12, wherein:

the sensor portion is operable to output an analog sensed pressure signal;

the analog to digital converter is operable to:

receive the analog sensed pressure signal; and

convert the analog sensed pressure signal to a digital sensed pressure signal; and

the software instructions comprise instructions executable by the digital signal processor to:

receive the digital sensed pressure signal;

compare the sensed pressure signal to the set point; and

generate a digital control signal.

14. The system of Claim 13, wherein the control portion is further operable to communicate the digital control signal to the valve drive.

15. The system of Claim 13, wherein the analog to digital converter is further operable to convert the digital valve control signal to an analog valve control signal.

16. The system of Claim 13, wherein the software instructions are further comprise instructions executable to perform self diagnosis of the device.

17. The system of Claim 10, wherein the sensor portion can comprise one of a parini gauge, a thermocouple gauges, a cold cathode gauge, or a hot cathode gauge.

18. A gauge with integrated pressure control comprising:

a pressure sensor to output a sensed pressure;

a processor coupled to the pressure sensor;

a memory accessible by the processor storing computer executable by the processor, the computer instructions comprising instructions executable to:

receive the sensed pressure;

compare the sensed pressure to a set point; and

generate a control signal based on a difference between the sensed pressure and the set point.

19. The gauge of Claim 18, wherein the computer instructions further comprise instructions executable to perform diagnosis of the gauge.

20. The gauge of Claim 18, wherein the gauge is operable to output the control signal to a valve drive.